CLAIMS

1. An optical information recording medium comprising a substrate and at least two information layers formed on the substrate, the information layer formed of a thin film that shows a change that can be detected optically by light beam irradiation,

wherein a separating layer that is transparent to a wavelength of the light beams is formed between the information layers,

each information layer has a sector structure including a sector address and a data area that are divided in a circumferential direction, and

positions of the sector addresses of the respective information layers coincide in the circumferential direction.

2. The optical information recording medium according to claim 1, further comprising a second substrate having a sector structure including a sector address and a data area that are divided in a circumferential direction,

a first information layer is formed on the first substrate and a second information layer opposed to the first information layer is formed on the second substrate, and

a position of the sector address of the first substrate and a position of the sector address of the second substrate coincide in the circumferential direction.

3. The optical information recording medium according to claim 1, wherein an amount of dislocation between the sector addresses of the respective information layers in a circumferential direction is smaller than a sum of a length of a gap between the sector address and the data area and a length of a guard data in the data area.

4. The optical information recording medium according to claim 1, wherein each information layer further comprises a management area, and a sector position identifier for identifying the position of a sector is located in an area other than the data area, the sector address, and the management area of each information layer so as to have a certain relationship to the sector address of each information layer in a circumferential direction.

5. The optical information recording medium according to claim 4, wherein the sector position identifier is arranged in proximity to the management area at an inner circumferential region thereof, and a shape of the sector position identifier formed on the information layer closest to the substrate is different from a shape of the sector position identifier formed on the other information layers.

6. The optical information recording medium comprising the substrates according to claim 2, wherein each of the first and the second substrate further comprises a management area, and a sector position identifier for identifying the position of a sector is located in an area other than the data area, the sector address, and the management area of each of the first and the second substrate so as to have a certain relationship to the sector address of each of the substrates in a circumferential direction.

7. The optical information recording medium according to claim 6, wherein the sector position identifier is arranged in proximity to the management area at an inner circumferential region thereof, and a shape of the sector position identifier formed on the first substrate is different from a shape of the sector position identifier formed on the second substrate.

8. An optical information recording medium comprising a substrate and at least two information layers formed on the substrate, the information layer formed of a thin film that shows a change that can be detected optically by light beam irradiation,

wherein a separating layer that is transparent to a wavelength of the light beams is formed between the information layers,

a first information layer, which is one of the information layers, has a sector structure including a sector address and a data area that are divided in a circumferential direction, and

the information layers other than the first information layer are provided with spiral guide grooves formed on an entire surface of a data area.

9. The optical information recording medium according to claim 8, wherein a sector address comprising a recording mark formed by irradiation

of light beams is provided on the guide grooves of the information layers other than the first information layer so as to be at the same circumferential position as that of the sector address of the first information layer.

10. The optical information recording medium according to claim 8, wherein a first substrate having guide grooves with a sector structure including a sector address and a data area that are divided in a circumferential direction and a second substrate having spiral continuous guide grooves are provided,

the first information layer is formed on the first substrate and a second information layer opposed to the first information layer is formed on the second substrate.

11. The optical information recording medium according to claim 10, wherein a sector address comprising a recording mark formed by irradiation of light beams is provided on the second information layer so as to be at the same circumferential position as that of the sector address of the first substrate.

12. An optical information recording medium comprising a substrate and at least two information layers formed on the substrate, the information layer formed of a thin film that shows a change that can be detected optically by light beam irradiation,

wherein a separating layer that is transparent to a wavelength of the light beams is formed between the information layers,

each information layer is provided with a data area on guide grooves and a sector address comprising a recording mark formed by irradiation of light beams, and

positions of the sector addresses of the respective information layers coincide in a circumferential direction.

13. An optical information recording medium comprising a substrate and at least two information layers formed on the substrate, the information layer formed of a thin film that shows a change that can be detected optically by light beam irradiation,

wherein a separating layer that is transparent to a wavelength of the light beams is formed between the information layers,

each information layer has a sector structure including a sector address and a data area that are divided in a circumferential direction, and

a recording mark is formed in recording areas of all the information layers except the most distant information layer from the substrate.

14. A recording/reproducing method for an optical information recording medium comprising:

recording/reproducing information signals on/from the optical information recording medium using an optical recording/reproducing apparatus,

the optical information recording medium comprising a substrate, at least two information layers formed on the substrate, and a separating layer formed between the information layers, the information layers formed of a thin film that shows a change that can be detected optically by light beam irradiation, and the separating layer being transparent to a wavelength of the light beams,

wherein signals having a predetermined pattern are recorded on recording areas of all the information layers except the most distant information layer from the substrate when the optical information recording medium is judged to be in a non-recorded state.

15. The recording/reproducing method for an optical information recording medium according to claim 14, wherein the signals having a predetermined pattern are recorded on the information layer closest to the light beams, and then sequentially recorded on the other information layers in an order in which the other information layers are positioned with respect to the light beams.

16. A recording/reproducing method for an optical information recording medium comprising:

recording/reproducing information signals on/from the optical information recording medium using an optical recording/reproducing apparatus,

the optical information recording medium comprising a substrate, at least two information layers formed on the substrate, and a separating layer formed between the information layers, the information layer formed of a thin film that shows a change that can be detected optically by light

beam irradiation, and the separating layer being transparent to a wavelength of the light beams,

wherein information signals are recorded on the optical information recording medium in such a manner that a first information layer, which is closest to the light beams, is recorded at the beginning, and then a second information layer is recorded after an entire surface of a recording area of the first information layer has been recorded.

17. The recording/reproducing method for an optical information recording medium according to claim 16, wherein the information signals are recorded on the information layers sequentially in an order in which the information layers are positioned with respect to the light beams.

18. A method for manufacturing an optical information recording medium comprising:

a first film forming step of forming a first information layer on a first substrate, the first substrate having guide grooves with a sector structure including a sector address and a data area that are divided in a circumferential direction, and the first information layer formed of a thin film that shows a change that can be detected optically by light beam irradiation;

a second film forming step of forming a second information layer on a second substrate, the second substrate having guide grooves with a sector structure including a sector address and a data area that are divided in a circumferential direction, and the second information layer formed of a thin film that shows a change that can be detected optically by light beam irradiation;

a sector position adjusting step of placing the first information layer and the second information layer opposed to each other so that a sector position of the first information layer and a sector position of the second information layer coincide, and

a bonding step of bonding the first information layer and the second information layer together using at least a separating layer.

19. The method for manufacturing an optical information recording medium according to claim 18, further comprising a hardening step,

wherein the separating layer is made of a ultraviolet curable resin,

the first and the second information layer are bonded together via the layer of ultraviolet curable resin, a sector position is adjusted in the sector position adjusting step before the ultraviolet curable resin is hardened, and irradiation of ultraviolet rays for hardening the ultraviolet curable resin is performed after the adjustment of the sector position has been completed.

20. The method for manufacturing an optical information recording medium according to claim 18, wherein each of the substrates further includes a sector position identifier for identifying the position of a sector, the sector position identifier is located in an area other than the data area, the sector address, and a management area so as to have a certain relationship to the guide grooves with a sector structure in a circumferential direction, and a position of the sector position identifier is detected in the sector position adjusting step so that an amount of dislocation between the sectors of the respective information layers is adjusted based on a result of the detection.

21. A method for manufacturing an optical information recording medium comprising:

a first film forming step of forming a first information layer on a first substrate, the first substrate having guide grooves with a sector structure including a sector address and a data area that are divided in a circumferential direction, and the first information layer formed of a thin film that shows a change that can be detected optically by light beam irradiation;

a sector position adjusting step of placing a stamper and the first information layer opposed to each other so that a sector position of the first information layer and a sector position of the stamper coincide, the stamper having guide grooves with a sector structure including a sector address and a data area that are divided in a circumferential direction;

a bonding step of bonding the first information layer and the stamper together via a separating layer formed of a transparent resin layer and hardening the separating layer;

a stripping step of stripping the stamper and the separating layer from the first substrate;

a second film forming step of forming a second information layer on a surface of the released separating layer, and

a step of protecting an information layer, in which a protective layer or a protective plate is bonded on the most distant information layer from the substrate.

22. The method for manufacturing an optical information recording medium according to claim 21, wherein three or more information layers are formed on a substrate by repeating the sector position adjusting step, the bonding step, the stripping step, and the second film forming step.

23. The method for manufacturing an optical information recording medium according to claim 21, wherein the first substrate and the stamper further include a sector position identifier for identifying the position of a sector, the sector position identifier is located in an area other than the data area, the sector address, and a management area so as to have a certain relationship to the guide grooves with a sector structure in a circumferential direction, and a position of the sector position identifier is detected in the sector position adjusting step so that an amount of dislocation between the sectors of the respective information layers is adjusted based on a result of the detection.